The Society of German Men of Science and Physicians.

CENTENARY CELEBRATIONS AT LEIPZIG.

IT is a hundred years since the Society of German Men of Science and Physicians held the first meeting, also in Leipzig, on September 18, 1822. Only eighty-seven meetings have taken place in this period, as in the years of great national calamities, such as war or epidemics, no meetings were held. Though the first meeting after the World-War, at Munich in 1920, was well attended, the society resolved to meet only every two years, so long as the present economic distress in Germany prevails.

Among the scientific workers who attended this year's meeting there were represented not only the great seats of learning of Germany and the German-speaking countries, but also most of the countries who had in former times sent their representatives to this meeting. The president was the distinguished Berlin physicist, Prof. Max Planck, Nobel prizeman in 1918 for physics. The committee included, among others, Prof. Palthauf, the great Vienna pathologist; von Dyck, the Munich mathematician; Profs. Gottlieb (Heidelberg), Willstätter (Munich), His and Bonhöffer (Berlin), Rinne (Leipzig); Privy Councillor Duisberg (Leverkusen). The arrangements for the meeting were carried out under the supervision of Prof. von Struempell and Prof. Wiener, both of Leipzig.

After the opening address by Prof. von Struempell, on September 18, in which he expressed his satisfaction at the great new tribute paid to German science, addresses were given by representatives of educational authorities, teaching institutions, and learned societies. Among the foreign representatives were: Prof. Becke (Vienna), Prof. Schlosser (Prague), Prof. Hagenbach (Basel), Prof. Sigrist (Bonn), Dr. Sven Hedin and Prof. Svante Arrhenius (Sweden), Prof. Goldschmidt (Christiania), and Prof. Bokay (Budapest). Congratulatory messages were also sent from Holland, Spain, U.S.A., and other countries.

After expressing his thanks for the addresses and messages Prof. Max Planck gave a survey of the development of German science during the past hundred years. Referring to the World-War, he said that one possession has not been lost by the German nation, namely, its national unity. The reconstruction of Germany's prosperity and the rebirth of German culture are not possible without German science. Many of the most important inventions which are used in modern industrial life, such as wireless telegraphy, the fixation of atmospheric nitrogen, the Röntgen rays, had been discovered in purely scientific laboratories. It is necessary to spread among all the nations of the world the conviction that the preservation and extension of purely scientific research in Germany is as necessary for the welfare and happiness of that country and the whole world as the development of industry and the production of raw materials. Scientific work is international in its nature, and therefore well fitted for creating and furthering mutual understanding and peaceful co-operation among the peoples of the world. The German men of science and physicians were ready to respond to frank and honest approaches made by foreign fellow-workers, but they would naturally not think of begging for admission where they were not wanted.

The subject of the first general address was the theory of relativity. Prof. Einstein himself had originally intended to be present, but he was prevented from appearing by his journey to the East. It may be mentioned that a protest against this subject, as not yet ripe for scientific discussion, had been lodged by a number of well-known men of science of Germany and other countries. The lecturer was Prof. von Laue (Berlin), and he stated that the questions with which the theory of relativity is concerned are as old as science and scientific research. The modern problem is whether it is possible to ascertain an absolute velocity of any moving body. The transmission of light and electricity through space, even in a vacuum, has led to the assumption of an æther. All experiments, however, which have been made in order to discover how great is the velocity of the earth with respect to the æther have failed. The special or restricted theory of relativity, which maintains that it is impossible to ascertain any absolute velocity, has therefore been generally accepted by physicists.

It is a different question with the much more complicated and difficult general theory of relativity of Einstein. This is concerned with the old problem of the force of gravitation. Here mathematical processes have to be introduced which no physicist had thought of applying before Einstein. Though this part of the relativity theory has not yet been established so as to exclude every possibility of doubt, it can be regarded as an extremely valuable stimulus to further research.

This lecture was followed by an address by Prof. Schlick (Kiel) on the philosophical importance of the theory of relativity. He stated that the theory, though originally devised only to explain physical phenomena, has a great philosophical importance. The philosophical tendencies of Einstein's thinking pointed to a kind of positivistic philosophy, a philosophy of pure experience which takes no account of so-called elements or substances, and regards as the ultimate facts of all happening the observed events themselves. We may say that the period of the separation of philosophy and science is ended and that they are beginning to approach each other again.

On September 19 the first subject treated was that of heredity, and Prof. Johannsen of Copenhagen gave a survey of the work done during the past century in this field. The conclusion he comes to is that no positive result has been obtained in regard to the great questions of the origin of species and their evolution. A destructive criticism, however, of the chief ideas of both Darwin and Lamarck has been achieved, and the belief in natural selection as well as in a gradual fixation by heredity of qualities obtained by adaptation has been thoroughly shaken. Prof. Meisenheimer of Leipzig showed the results of experiments in crossing flowers, insects, and guinea-pigs. He explained the various connecting links, the mixed types, and described cases of reversion. His conclusion is that the experiments are subject to many chance influences and not very certain. It has been impossible, so far, to carry out all the calculable experiments; in many cases it will be necessary to resort to statistics.

Great interest was aroused by the lecture of Dr. Lenz of the University of Munich, on heredity in the human race. In this field, he stated, no experiments are possible. The only materials available are comparative observation of animals and plants and vital and genealogical statistics. The validity of Mendel's law has also been proved in the case of man; further, it is certain that no acquired qualities are inherited. In regard to the determination of the sex of unborn children, Dr. Lenz said that we can to-day already predict with a great degree of accuracy

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the inherited qualities of children. There is no spontaneous degeneration and no ageing of a race, though the transmitted substance may be damaged by such poisons as alcohol and tobacco. Race-suicide among the educated classes is threatening the continuance of our civilisation. In order to lead to practical results in improving the race, racial biology must be supported by the State.

A very interesting series of lectures was given on the action of electrolytes on the organism. The first of these, entitled "Colloids and Ions," was delivered by Prof. Wo. Ostwald of Leipzig, and it provided the starting-point for a number of addresses. Prof. Hoeber, Kiel, dealt with the effect of the ions on physiological surfaces. We know to-day that no organ of the human or animal body, no plant, and no micro-organism reacts normally if the ions in the neighbourhood of the cells are not present in the proper proportions. The heart beats abnormally if it is surrounded by a minute excess of potassium ions or calcium ions. The corpuscles of the blood, in the same circumstances, may perish prematurely, or in the plant, growth may be abnormal. The ions are carriers of electric charges and they are active in all processes of stimulation of living tissues by means of electric currents. Their movements are also the cause of the curious electric currents which all living beings are capable of producing, and which represent the highest degree of excitement. The explanation of the nature of the effect of the ions is of the greatest importance for the proper understanding of the phenomena of life.

It is a curious fact that the ions need not penetrate into the living cells themselves. The conclusion is that they react with the surfaces of the cells, the "physiological boundaries." Three groups of phenomena were discussed. In the first instance, the cells themselves carry electric charges, and they interact with the charges of the ions. A result of this may be clotting, or "agglutination," as, for example, in the well-known case of the clotting of the blood-corpuscles during pregnancy. Secondly, the interaction of the salt-ions and the cell-surfaces produces the bio-electric currents which have been referred to above. In a model the substance of the cell-surfaces may be replaced by organic oils, and by bringing these oil films in contact with various salts the electro-physiological phenomena may be well imitated. Thirdly, a change in the composition of the normal mixture of ions on the surface of the cells alters the power of transmission of the surface, so that the normal diffusion between the inside of the cell and the surrounding fluid is disturbed. These results show that medical science will have to study these purely physico-chemical phenomena in order to be able to explain fully and deal properly with the processes of life.

Prof. Spiro of Basel, in dealing with the same subject, stated that every electrolyte seems to play a special part in the organism. Especially the effect of the small ions of water and of the colloid electrolytes must be studied. For health there must be a proper equilibrium of all the necessary ions.

Quite a sensation was caused by the lecture of Prof. Mayer of Hamburg on the new preparation against trypanosome diseases, "Bayer 205," produced and manufactured by Friedrich Bayer, Leverkusen (near Cologne). This new drug, which is said to contain neither arsenic, antimony, mercury, nor any other inorganic therapeutic reagents, has been extensively tested, both in Europe and tropical countries, and found to give excellent results in advanced stages of sleeping-sickness and other trypanosome diseases. A station for further experiments has been fitted up in South Africa.

In the geographical section Dr. Sven Hedin lectured on his travels in Tibet, summarising the results contained in his various works and producing a great number of fine lantern-slides. The lecture was enthusiastically received.

A great number of papers was read by eminent medical workers on special subjects. Prof. Flechsig gave a survey of his well-known studies in mental pathology in a lecture on the localisation of the brain functions. Many lectures were also delivered on technical and industrial subjects, such as workshop control by means of optical measuring instruments and modern methods of rapid reception and despatch of wireless messages.

The two lectures on enzymes, by Profs. Willstätter of Munich and von Euler of Stockholm, were well attended and full of interest. Prof. C. Neuberg of Berlin lectured on recent advances in the study of fermentation.

A special feature of the congress was the lecture by Prof. Wilhelm Ostwald of Leipzig on his new methods of quantitative determination of colours. Based on the Law of Fechner, his system of colours includes the dull colours which Helmholtz excluded. The colours of our environment cannot be measured by wave-lengths, but only by means of revolving coloured discs with a variable black sector. New was the communication that we nowadays no longer distinguish six principal colours, but must assume eight, which number agrees with Fechner's Law.

Space forbids more than a short reference to the valuable lecture by Prof. Svante Arrhenius of Stockholm on physical law in the cosmico-chemical processes, by Prof. V. M. Goldschmidt of Christiania on the metabolism of the earth, and by Prof. Nernst of Berlin on photo-chemical processes. In the last of these it was stated that Einstein's law of photo-chemical equivalents no longer holds good. Light does not produce a primary splitting up of the chemical substance, but an addition of energy. Our photographic plates would have to be 6000 times more sensitive in order to approach to the ideal.

Many more valuable lectures on special subjects were delivered. The town of Leipzig showed its splendid hospitality and provided entertainments and many occasions for social and personal intercourse.

B. RASSOW.

The Present Position of Darwinism.

ONE of the discussions which aroused most interest during the British Association meeting at Hull was that held jointly by the botanical and zoological sections on "The present position of Darwinism." There was a large attendance, the discussion being presided over by Prof. H. H. Dixon, who was supported by Dr. E. J. Allen. The theory of the origin of species by natural selection, which has already been assailed by the geneticists, was attacked from a different point of view by Dr. J. C. Willis and Mr. Udny Yule, who treated the subject with special reference to geographical distribution and the statistical analysis of genera and species. During the discussion the older view as to the significance of natural selection was stoutly maintained by some speakers.

After a few introductory remarks by Prof. Dixon, the discussion was opened by Dr. J. C. Willis, who

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